

Issues for NJ CEC Residential Programs Meeting of June 15, 2004

From the Ratepayer Advocate

The Ratepayer Advocate has identified several issues for discussion at the June 15 meeting. We have not formulated comprehensive program details and descriptions. We may also bring other issues to the discussion, but following are those that we believe deserve top priority.

1. Cost-Benefit Analysis

Currently, assessment of the likely cost-effectiveness of future programs depends either on previous research (for programs with sufficient history) or on estimates that might be provided by those who propose new programs or program components. Consideration should be given to retaining a cost-effectiveness screening consultant so that there is a uniform source for estimates of the likely costs and benefits of future programs. The consultant would provide estimates of costs and benefits using the most reliable cost-effectiveness perspectives. The “total resource cost” test and the “energy system test” are among the cost-effectiveness perspectives that can produce useful guidance information.¹ The consultant would screen proposed program concepts, provided that they survived an initial qualitative feasibility assessment, (perhaps at this committee), and provided that they were specified in sufficient clarity for the consultant to proceed. There are many capable firms that could perform this function.

2. Home Performance with Energy Star™

A small pilot program is underway with non-Clean Energy Program (CEP) funding. We understand that, although \$1 million of CEP funding has been budgeted for this program for 2004, no wider program has yet been launched. This office considers the launch of the wider program an important goal for 2004, as well as the inclusion of funding for such a wider program in 2005-2008.

3. Residential HVAC -- Warm Advantage

The residential heating, ventilating and air-conditioning (HVAC) program relates both to cooling (“Cool Advantage”) and heating (“Warm Advantage”). We are interested in several aspects of the Warm Advantage program -- proper sizing for gas heating systems, the feasibility of promoting integrated or “combo” systems to provide multiple functions (water heating, space heating, ventilation and/or space cooling), and promoting more efficient electric motors in fossil-fuel heating systems. A note about each follows.

¹ The “energy system test” (formerly known as the “utility test”) compares the ratepayer funds invested in an energy efficiency program over some period of time with the likely economic value of the resulting electricity, gas, and other readily quantifiable resource savings (e.g., fuel oil and water). The “total resource cost” test evaluates the same benefits, but expands the definition of costs to add net private investments caused by energy efficiency programs to ratepayer funding costs.

- Proper sizing. We support the move to budget for and deliver training on proper sizing and installation of gas heating equipment. Field studies have documented a continuing HVAC installer practice of significantly over-sizing gas heating systems, and have estimated the potential for saving gas through proper sizing.² Water heaters are often oversized as well. Proper sizing and installation have been integral to the electric program but not the gas program. Launching statewide training through the Eastern Heating/Cooling Council (which already does electric-side training), as we believe the utilities are proposing, is a good first step. Once this step has been taken to train installers about sizing, we should move to step 2: the integration of proper sizing into the CEP program during 2005.
- Combo systems. There are a number of integrated or “combo” systems on the market, but their market penetration is quite low. Other, more advanced systems are approaching commercialization. One type of system is based on storage hot water heaters, which include heat exchangers to provide space heat or cooling. An example is the Bradford White Corp. Combicor® TTW power vented water heater, which provides a water heating energy factor (EF) of .64-.65, and space heating (maximum capacity 60,000 Btu/h) at 82% annual fuel utilization efficiency (AFUE). Another type of system is based on either a boiler or a water heater, and incorporates ventilation. An example is the Nu-Air Enerboss™ system, which in field tests saved 12-25% of the natural gas and 30% of the electricity otherwise required for its functions, with a heating efficiency of AFUE 87-88%. These systems are not yet “condensing”, but the combined efficiency across functions may make some of them CEP candidates. Globally, there is considerable research and development going on with regard to improved combo approaches. We recommend a task force or working group assigned to investigate these technologies, both as to the efficiency gains they offer and the challenges to inserting them into the market channels for delivering and installing HVAC systems.
- Electric motors. The motors that drive fans used by forced hot air heating systems use substantial amounts of electricity. Now, more efficient electric motors have been coupled to such heating systems, to circulate heated air, and in some applications to also circulate air cooled by central air conditioning systems using the same ducts. Because they give off less heat, these motors may actually increase fossil fuel consumption. However, they can save so much electricity that this more than compensates for any increased fossil fuel use on a net basis. To promote efficient motors, the Consortium for Energy Efficiency has developed a standard that no more than 2% of the total energy used by a furnace should be electricity. The statewide demand-side management programs in Massachusetts recognize the value of efficient electric motors by a pilot program offering a higher incentive when they are included in furnaces. The simplest step to take would be to incorporate efficient motors into the gas HVAC program beginning 2005. Note though that efficient motors can save in oil-heat applications, too. This opportunity should be

² See *Public Service Electric & Gas Baseline Survey of Residential New Construction*, October 1997, and *New Jersey Residential HVAC Baseline Study*, November 2001. Both sources estimated that proper sizing would save 7% of heating energy. We note that such savings would be available from proper sizing of *non-condensing* equipment; there is no comparable energy use penalty for oversizing condensing equipment.

pursued, again through some appropriate process, to develop an efficient motor component to the HVAC program. Representatives of the oil-heat industry should be consulted in order to determine the best way to include that market in the efficient motor program component.

4. Gas Fireplaces

An estimated fifty percent of new homes with natural gas distribution service are built with gas fireplaces. Rating systems for the efficiency of fireplaces have now been developed. The question should be addressed as to whether there is enough of an efficiency range within gas fireplace products to warrant the development of an educational CEP program component to address them. The aggregate gas usage they account for may be too little to warrant a rebate program on fireplaces. However, it may be useful to provide informational tools so consumers and builders can make educated decisions about fireplace products. We need to determine how to get this investigation accomplished.

5. School – Energy Education

The schools energy education programs offered previously were, unfortunately, terminated. One of the terminated programs was “In Concert With the Environment,” a well-designed award-winning program for middle school students.³ We are concerned about the fallen status of school education programs. We hope that at the June 15 meeting the OCE staff can provide information about how these programs are being reinvented.

6. Appliance Cycling

Appliance cycling is an important demand management program that is no longer included within the CRA/CEP budget. Its continuation and possible expansion are important issues. A study to assess the program and its costs and benefits will be launched shortly through the Rutgers Center for Energy, Economic and Environmental Policy. This program’s future should be discussed at the June 15 meeting or at some other designated time. While the current appliance cycling programs’ costs have been moved out of the CEP, we understand that the BPU has expressed interest in improving these programs through cooperation between the OCE and work that is ongoing in the Basic Generation Service.

³ See <http://www.nexusenergy.com/energyedu.asp>